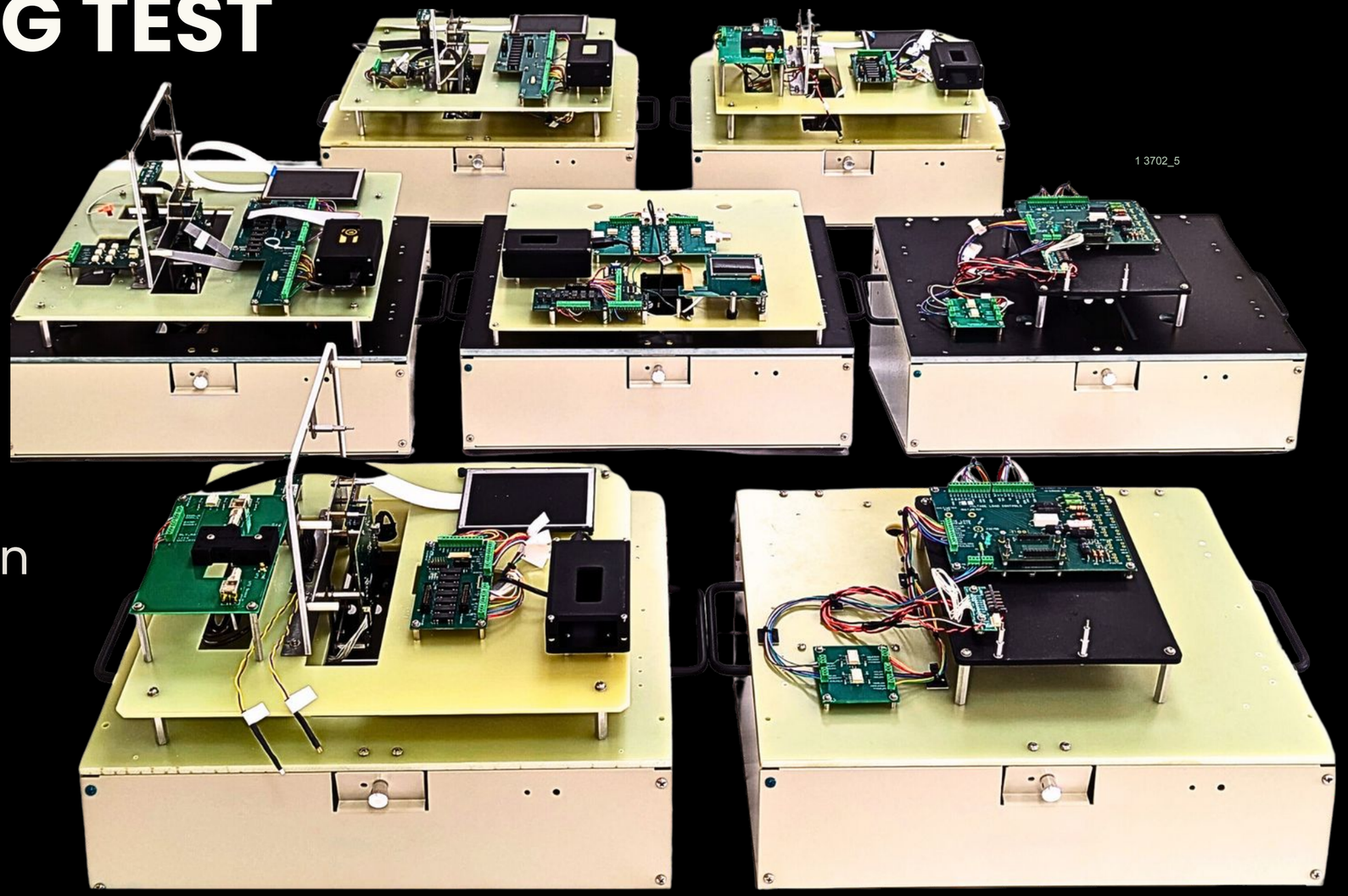
MANUFACTURING TEST FIXTURES



Presented by CAE Integration

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TODAY'S AGENDA

1 Introduction

2 About Us

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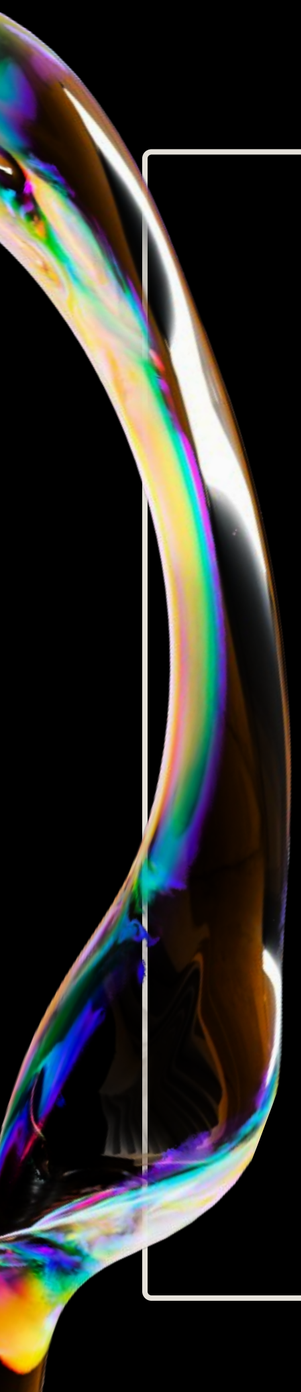
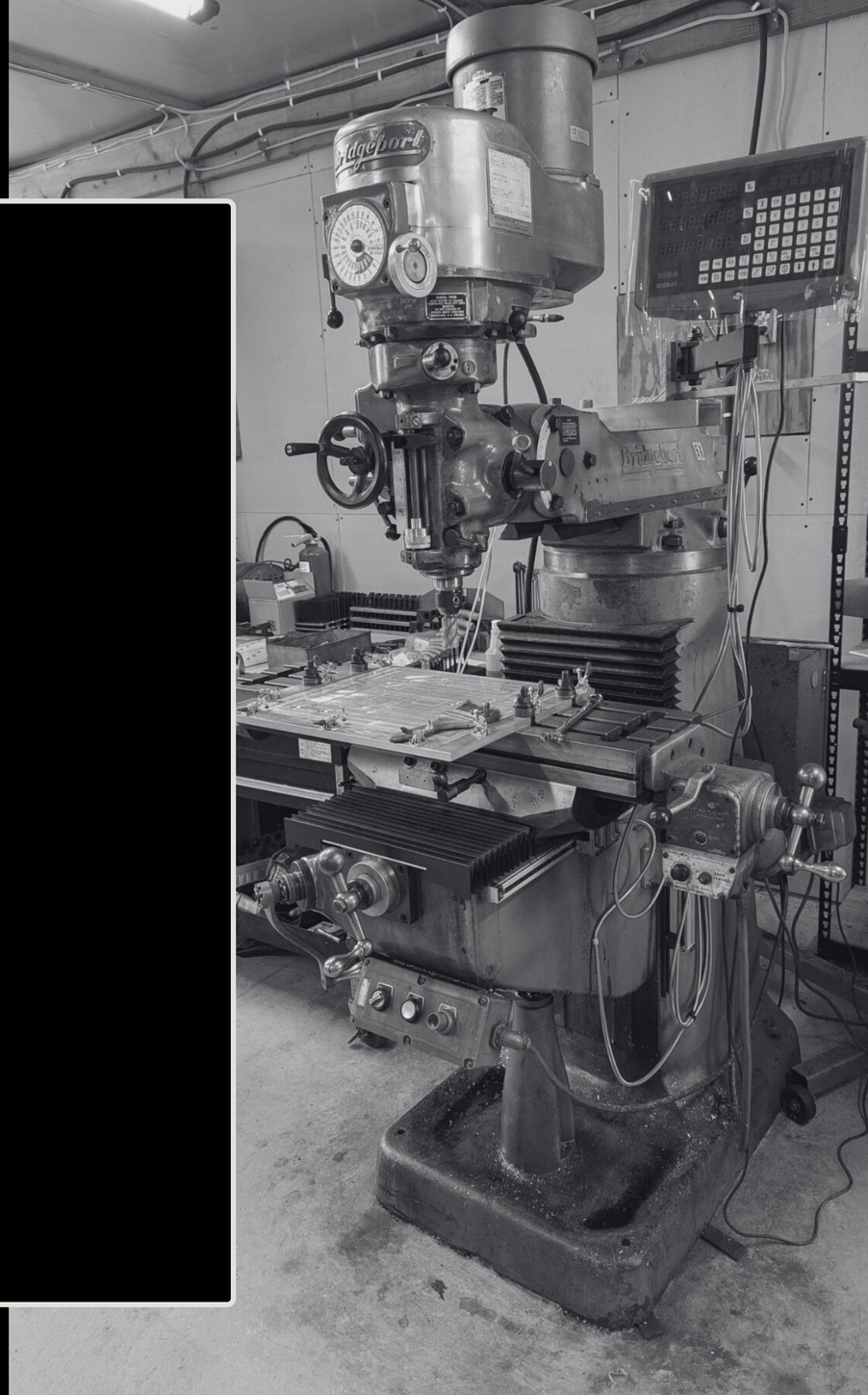
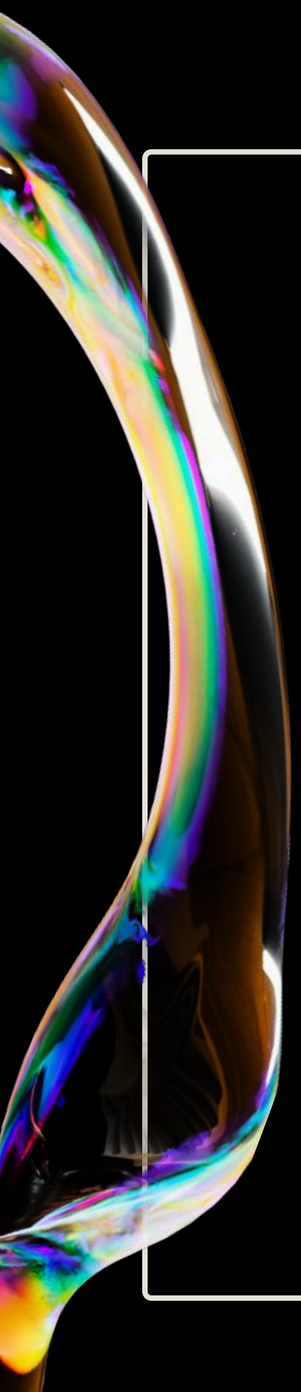


INTRODUCTION

Leverage our in-house electrical and mechanical design, machining, 3D printing, and assembly capabilities to customize your enclosures or produce turnkey fixtures for you.

CAE Integration is focused on assisting OEMs in bringing new products to market, ramping up production, and supporting the manufacturing line. We specialize in meeting the needs of manufacturing while cutting the burden on engineering. With our team designing and supporting tests that meet your manufacturing team’s process, your development team can focus their time and energy on developing the next product.

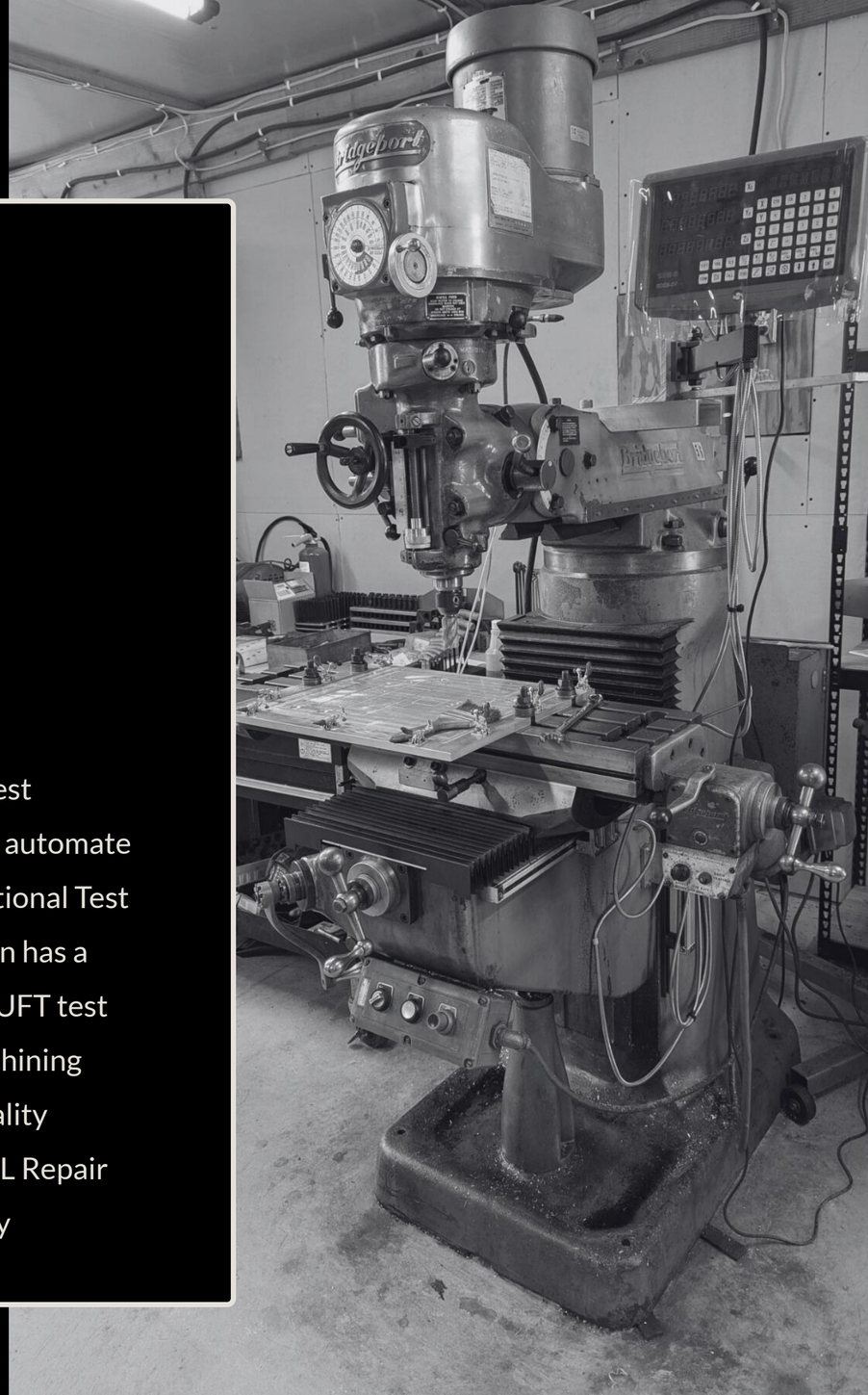




ABOUT US

CAE Integration stands for **Computer Automated Engineering Integration**. When developing your manufacturing test solution, our approach starts by leveraging the work you have already done. We tap into your CAD/CAE/ERP environment and reuse your own expertise to save you money when developing test solutions.

We start with a complete testability review of your product or design, leveraging structural test wherever possible. Often a critical or cutting-edge feature requires a functional test. We can automate these into your existing test platform or in our own software platform we call Universal Functional Test (UFT). This is a modular software test framework written in Tcl/TK w/Expect. CAE Integration has a library of interfaces and test routines that we have been accumulating since 2007 that make UFT test programs quick to develop and debug. Combining all this with our onsite 3D printing and machining capabilities we can provide complete turnkey test solutions quickly. Don't have a test and quality database solution? The standard recordkeeping from UFT tests interfaces to our General SQL Repair (GSR) database system for trending, failure analysis, and compliance with FDA Device History Recording.



PROBLEM STATEMENT

Need Turn-Key Fixtures

We write the test plan, translate it into a fixture design, then write and debug the test programs execute tests on your products.
We support the fixture during handoff to your internal team, your CM, and into production.

Need Existing Fixtures Updated

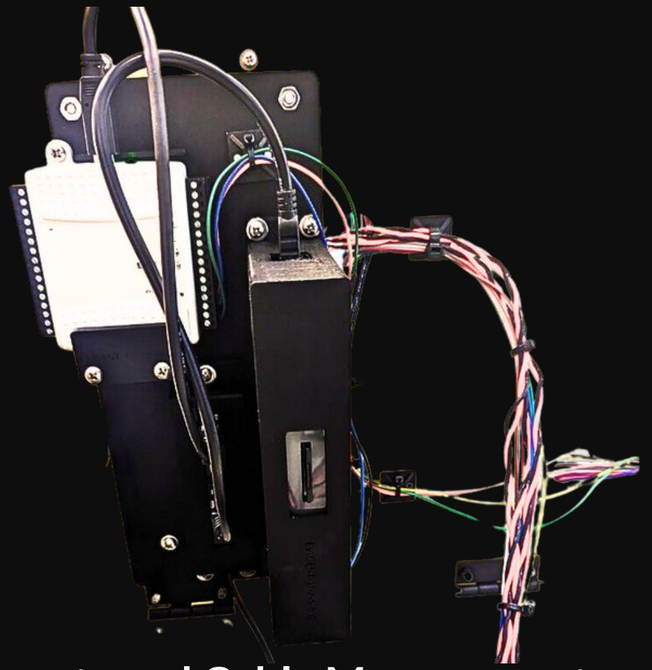
Do you have legacy fixtures that require updates?

- Wear
- Component lifecycle issues
- OS/Network/Security requirements

Surge Capacity

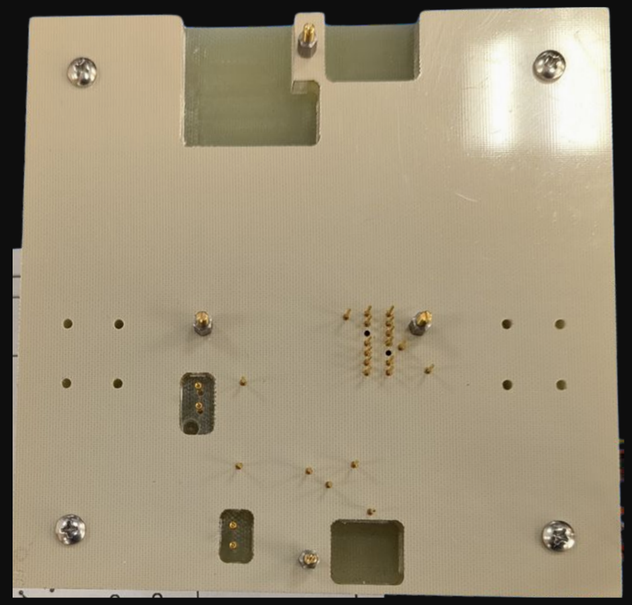
Your in-house test team is busy on other products and just needs someone to implement their test plan.

OUR INNOVATIVE SOLUTIONS



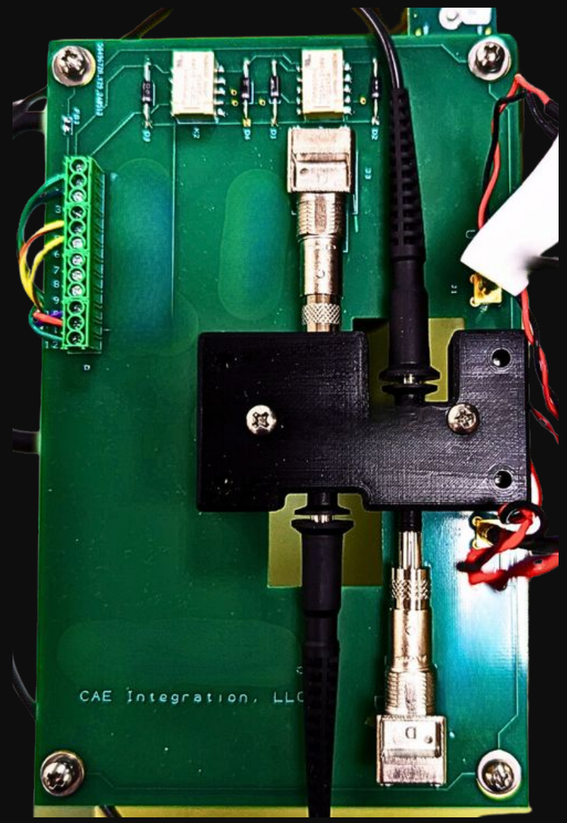
Mounts and Cable Management

It is often cost-effective to incorporate off-the-shelf hardware or programming modules into the fixture.



POGO Pin Fixture Design & FAB

Have a handful of testpoints and don’t want to measure them by hand? We got you covered.



Custom Circuit Boards

Test systems often need a circuit board to adapt among cable families, provide clock, power or other special functions.

DISCOVER OUR TEST FIXTURE DESIGN SERVICES

CIRCUIT BOARD DESIGN

We can tackle your product’s special requirements without delay using our in-house circuit board design capabilities.

3-D PRINTING

In-house 3D printing capability allows us to quickly and inexpensively try multiple approaches to a mechanical problem then print a final solution.

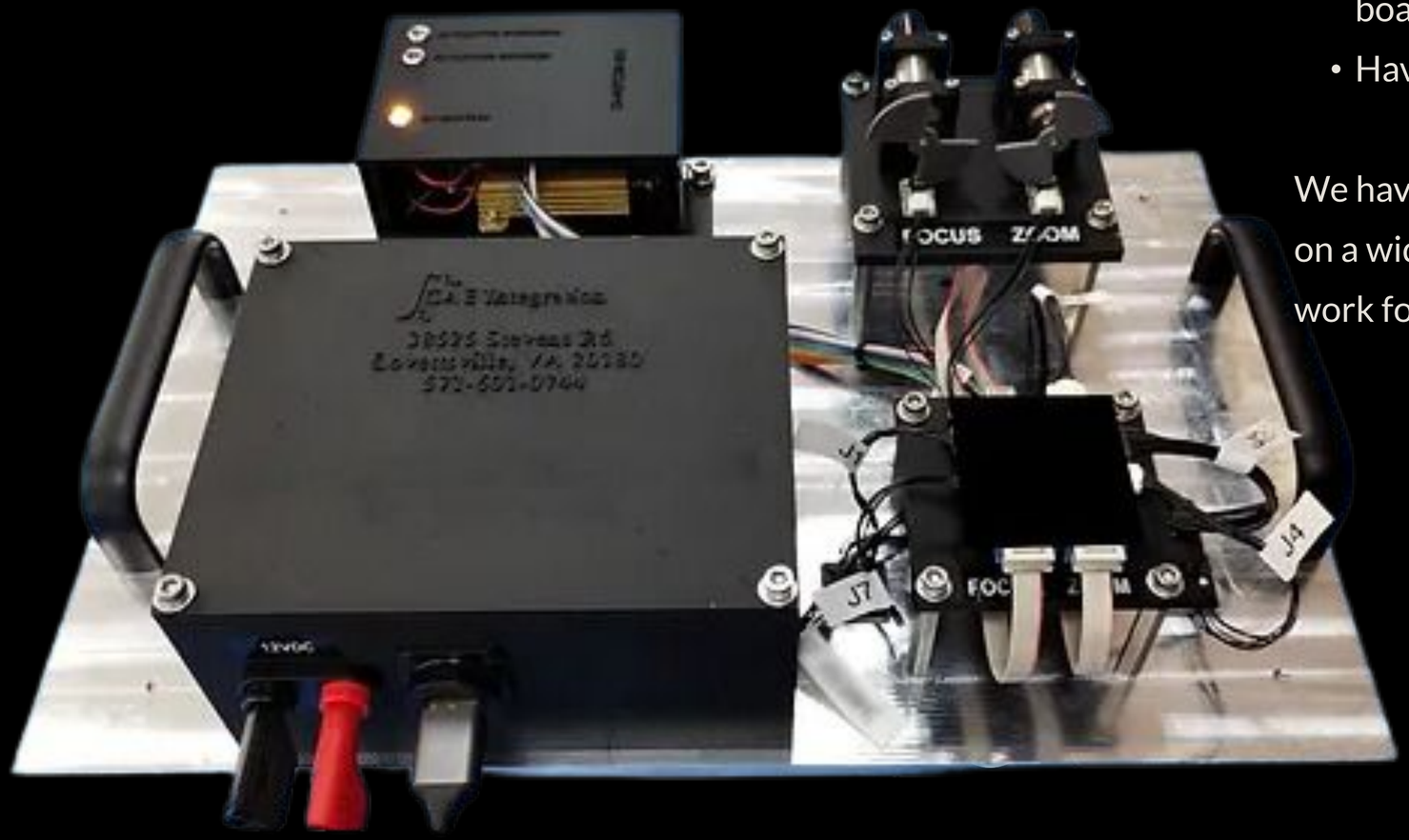
MACHINING

Specialized metal parts in your fixture can be prototyped and produced on the spot, shortening the design cycle and supply chain.

ASSEMBLY

Our assembly staff handles SMT and thru-hole boards, discrete wire and box build to deliver your complete fixture fast.

CUSTOM FIXTURING



Every product does something special, but from a test standpoint products share more commonalities than differences. Do you...

- Need to test moving parts? Sensors of moving parts?
- Analyze measurements in a math program?
- Require physical access for test technicians to debug bad boards when the board is plugged into the fixture?
- Have a load test that needs to dissipate a lot of power?

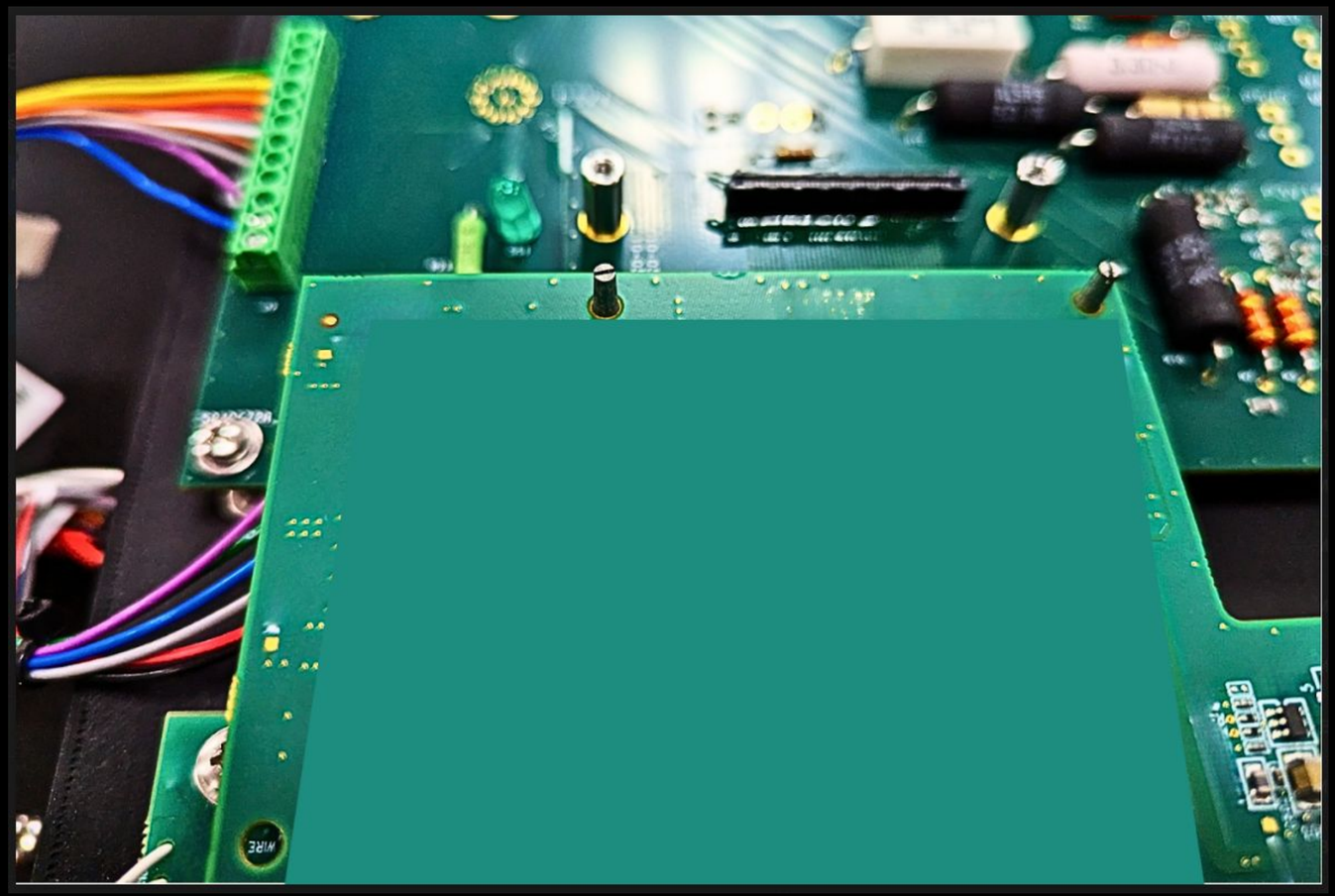
We have already solved decades of production test problems on a wide variety of products and will put our experience to work for you!

RADAR FIXTURES

Expert Team

These fixtures incorporated targets for RADAR and LASER emitted from the product to quantify the performance of each. We integrated the customer's Matlab code into the production software flow for automatic processing. Custom mounts and cable routing enable the test technicians to quickly load, probe, and unload the product.

Customer Focus

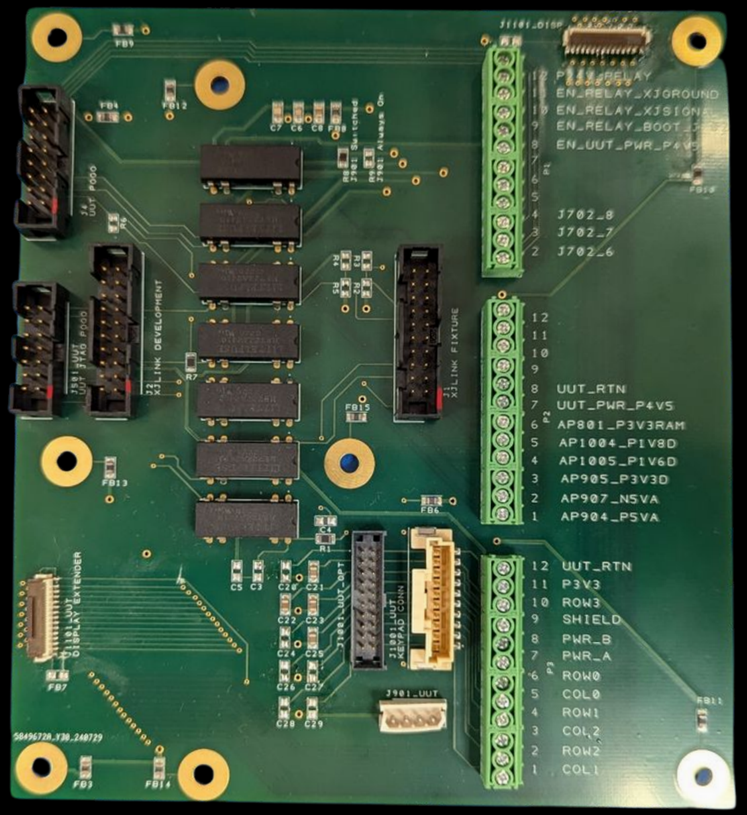


MACHINED PINS

Have a mix of English and Metric parts in your product? Can't find the right guide pins? We can cut to length or turn custom guide pins on our lathe.

- Metric Height English Hardware
- English Height Metric Hardware
- Custom-cut Guide Pins

CIRCUIT BOARD



Test systems often need a circuit board to perform simple functions like

- Adapt product cables to test interface
- Provide clock, power or other special functions
- Multiplex I/O
- Switch connections between test and functional equipment
- Sequence power and loads
- Talk to special interfaces

In-House PCB design and layout.

We use a low-cost prototype fab with a standard 1-week turn.

In-house assembly and test.

In-house test program and software development.

ACCOMPLISHMENT DATES

2022

Company's first brick & mortor location.

2023

Delivered a set of 3-D printed RADAR system test fixtures for the launch of a suite of award winning products.

2024

Delivered 3-product clamshell fixture with motorized tests. Rebuilt machine shop's lathe and mill. Upgraded Prusa 3-D printer for high-temperature plastics.

Present

Suite of functional test fixtures were updated in LabView for a scheduled move in production.

$\int_{t_0}^{t_\infty}$CAE

MEET THE TEAM

Thank you for your time! Reach out to us for questions.

CHRIS PLUMLEE
President

GAVIN PLUMLEE
Mechanical Design

ALANNA QUIMPO
Developer

ADRIANNA BELLMAN
Senior Assembler

$\int_{t_0}^{t_\infty}$CAE

THANK YOU

for your time and attention

Presented by CAE Integration

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